REMARKS

Claims 9, 10, 12, 13, 15-16 and 22-31 are pending. By this Amendment, no claims are cancelled, amended or added.

Telephonic Interview Summary

Applicants thank the Examiner and his supervisor, Jessica Ward, for the courtesy extended to their representatives, Bradley J. Thorson and the undersigned representative, in a telephone interview on March 19, 2009. Applicants note that the Interview Summary dated March 25, 2009 mistakenly lists Applicants' representative, Thomas G. Dickson, as participating in the telephonic interview instead of Bradley J. Thorson and the undersigned representative. Applicants confirm the substance of the interview as contained in the Interview Summary, but clarifies that the comment – "exhaustive arguments have been filed against the Forrest et al. reference in the course of the prosecution history but the examiner continuously maintains Forrest et al. as a viable reference" – was made by Applicants' representative in reference to Applicants' previous responses that have overcome the Examiner's previous rejections of Forrest et al. in view of other secondary references, but now the Examiner has taken the position to rely solely upon the Forrest et al. reference. During the telephone interview, Applicants' outstanding claims generally were discussed, as was the cited Forrest et al. reference and the Examiner's position relying solely upon the Forrest et al. reference.

For the reasons discussed below in response to the outstanding Office Action, Applicants respectfully disagree with the Examiner's position in the Interview Summary that one of ordinary skill reading Forrest et al. would appreciate that the several embodiments disclosed collectively render the claimed invention obvious.

Claim Rejections-35 U.S.C. § 103(a)

The Examiner rejects claims 9, 10, 12, 13, 15, 16 and 22-31 under 35 USC 103(a) as obvious based on Forrest et al. (US Patent No. 6,398,883) (hereinafter "Forrest"). Applicants respectfully traverse this rejection. Attached hereto is a Declaration from Robert Jan Maziarz, which is incorporated in its entirety herein. The Examiner's rejection is respectfully traversed as a *prima facie* case of obviousness of Applicants' claimed invention has not been established.

In a previous Office Action date March 31, 2008, the Examiner admitted that Forrest fails to teach the step of friction stir welding a region of both components before fusion welding, but looked to Thomas (WO 93/10935). In the instant Office Action, the Examiner again admitted this failure of Forrest, but instead of relying upon a secondary reference, now relies solely on Forrest with the argument "that it would have been obvious to one of ordinary skill in the art at the time of the invention to friction stir separately both the structural member and the insert to refine their respective surfaces and eliminate any residual stresses that may exist on the surfaces prior to aligning and fusion welding them together since the success of achieving a weld joint of high integrity would have been reasonably predictable or expected and therefore it would have been obvious to one of ordinary skill in the art to try said practice." In the Interview Summary, the Examiner stated "the examiner agrees that Forrest et al. does not specifically teach the sequence of the claimed invention in a single embodiment." The Examiner, however, stated "Forrest et al. teaches surfaces of workpieces prepared by friction stir and subsequently secured to other work pieces by fastening, [sic] Forrest et al. also teaches workpieces secured to each other by fusion welding and then the surfaces are friction stir welded to relieve stresses. The examiner's position is that one of ordinary skill reading Forrest et al. would appreciate that the

several embodiments disclosed collectively render the claimed invention obvious." The Examiner's position in the Office Action and Interview is in error.

First, there is no teaching, motivation or suggestion in Forrest that preparing two separate work-pieces by applying a friction stir welding process to each work-piece **prior** to fusion welding should be done or that it might have any benefits. Instead, Forrest teaches that friction stir welding is to be performed in certain regions of structural members to increase strength and provide fatigue resistance where such structural members are subject to higher magnitudes of operational stress. Forest teaches that these regions are either on a single work-piece, such as an I-beam, or two work-pieces that have already been welded together. Thus, the motivation in Forrest for using friction stir welding is that fusion welding increases the operational stress loads of a single work-piece or the joint of two work-pieces already welded together. In other words, with respect to two separate work-pieces, Forrest teaches that friction stir welding is used because fusion welding has **already** taken place resulting in comparatively higher magnitudes of operational stress. There is no hint that applying friction stir welding around the joint in a different way could improve the properties of the fusion welded joint. Instead, one of ordinary skill in the art would understand Forrest to use friction stir welding as a post-process application in certain regions that are subject to higher magnitudes of operational stress, such as a joint after fusion welding has already taken place. (Decl. Robert Jan Maziarz.) Thus, Forrest teaches away from the claimed invention of performing friction stir welding as a pre-process application on the surfaces of the two separate work-pieces ***prior to fusion welding***.

Second, there is no teaching, motivation or suggestion to perform friction stir welding on the surface of each work-piece that is to be aligned and abutted with each other, which is a

different surface of each work-piece than the surface of each work-piece that is actually fusion welded. In stark contrast, Forrest teaches that friction stir welding is to be performed either on a region of a single surface that is subject to higher magnitudes of operational stress, such as an I-beam, or a region that is the **same** surface that is left exposed after fusion welding has already taken place, which is also subject to higher magnitudes of operational stress. Forrest provides no teaching, disclosure, or suggestion whatsoever of performing any kind of pre-welding treatment to any of the two separate surfaces that are to be aligned and abutted. Moreover, the Examiner's argument fails to provide any rationale as to how one of ordinary skill in the art after reading Forrest would envisage performing a preparation step of friction stir welding on the surface of each separate work-piece that is aligned and abutted, which are different surfaces from the surface disclosed in Forrest that is fusion welded. Instead, one of ordinary skill in the art after reading Forrest would envisage performing friction stir welding on the surface left exposed after the fusion welding has taken place. (Decl. Robert Jan Maziarz.) Thus, Forrest does not teach, disclose, or suggest the claimed invention.

Third, a person of ordinary skill in the art after reading Forrest would have to envisage performing friction stir welding on **both, or two separate,** surfaces that are aligned and abutted with each other. In Forrest, the friction stir welding process is only performed on **one** surface. As it applies to fusion welding, the one surface is the surface left exposed after fusion welding has already taken place, which is not even one of the two surfaces to be aligned and abutted to the other work-piece surface prior to fusion welding as claimed.

Finally, a person of ordinary skill in the art would have to envisage preparation of surfaces of the work-pieces that are different from the surface that is to be fusion welded. There

is no teaching, motivation or suggestion in Forrest to prepare either of the surfaces of the two work-pieces that are aligned and abutted. Instead, one embodiment of Forrest teaches friction stir welding in a region of a structural member that will be subject to higher magnitude of operational stress (e.g., threaded openings, web or end portion of I beam, torque load on tubular member and casting defects). There is no teaching, motivation or suggesting in Forrest, however, that the friction stir welding in this embodiment is being used on or even near the surface where the structural members will be joined together, much less where the structural member will be fusion welded with another structural member. In another embodiment, Forest teaches using a friction stir welding probe in a region of an I-beam that will have a sharp machined radii. Forrest, however, fails to teach, disclose or suggest using the milling machine in or around a weld joint. Instead, the milling machine is used to machine a certain shape from a solid metal billet. In another embodiment, Forest teaches friction stir welding a joint between two parts (an insert and a structural member). This embodiment of Forrest, however, teaches that the friction stir welding occurs adjacent to and along the fusion welded joint path to locally refine the grain structure between the already fusion welded components. This disclosure in Forrest also teaches using friction stir welding **after** the fusion welding has already occurred and that the friction stir welding is applied to the surface left exposed, which is a **different** surface than the surfaces of the work-pieces that are actually abutted and aligned. Thus, one of ordinary skill in the art after reading Forrest would not think to perform the preparation of surfaces using friction stir welding before fusion welding, much less friction stir welding on a surface of each of two work-pieces that are different than the surface fusion welding is applied to. (Decl. Robert Jan Maziarz.)

Moreover, Forrest does not teach all of the claim limitations in independent claims 9, 10, 22 and 23. For example, because the surfaces of the work-pieces that are friction and fusion welded in Forrest are the same, Forrest does not teach, disclose, or suggest the claim limitation that the friction stir welded region abuts another friction welded region prior to fusion welding, as claimed in independent claims 9, 22, and 23. As another example, the friction welding region is to extend into the work-piece to a depth that exceeds the depth of material that is caused to melt by the fusion welding process, as claimed in independent claims 10, 22 and 23. As a further example, claim 22 requires the work-piece to have at least a 50 mm cross-sectional dimension and the friction stir weld depth to be **at least** 10 mm. Forrest does not teach, disclose or suggest the 10 mm depth dimension. Instead, the friction depth disclosed by Forrest is 0.25 inches (**less than** 6.5 mm). Clearly 6.5 mm is less than 10 mm, and not more than 10 mm as required by claim 22.

Based upon the foregoing, a *prima facie* case of obviousness has not been established, as the Forrest reference individually does not teach or suggest all of the features included in independent claims 9, 10, 22 and 23. If an independent claim is non-obvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837, F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Therefore, Applicants are not presenting additional arguments with respect to the patentability of the dependent claims, although Applicants do not acquiesce to any of the rejections and reserve the right to raise additional arguments with respect to the patentability of such claims. As all remaining pending claims depend directly or indirectly from one of the subject claims, Applicants respectfully request that the rejections under §103 be withdrawn. Also, because a *prima facie* case of obviousness has not been established,

Applicants do not comment further here on the suitability of combining or modifying the cited references as applied to the dependent claims. Thus, withdrawal of the rejection of claims 9, 10, 12, 13, 15, 16 and 22-31 is respectfully requested.

Conclusion

In view of the foregoing, it is submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.

The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution.

Respectfully submitted,

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